CTCN
CLIMATE TECHNOLOGY CENTRE & NETWORK

Instructions to lead Implementers for drafting the Technical Assistance Closure and Data Collection Report

Objective of the technical assistance (TA) Closure Report and Data Collection Report:

- To communicate publicly in one synthesis document a summary of progress made and lessons learned under the technical assistance (TA) towards the anticipated impact (main template).
- Compile TA-specific information required for internal use in donor and UN reporting (annex 1).

Steps for completing the TA Closure report:

1. The lead TA implementer drafts the report at the end of the assignment as a final deliverable /product. The TA Closure report will capture all activities conducted under the TA hence it is expected that duplication of information will occur from earlier documents. Please copy and summarise relevant material from previous TA outputs/deliverables and the Response Plan, as relevant.
2. A CTCN Manager will review and revise the report before final approval by the CTCN Director.

Important note on public and internal use of the closure report:
Once approved by the CTCN Director, the TA Closure and Data Collection Report will be a public document available on the CTCN website. Annex 1 is for internal use only and will not be publicly available.

Closure and Data Collection Report for CTCN Technical Assistance

1. Basic information

Title of response plan	Flood risk assessment for Dungsamchhu Basin in Samdrupjhonkar Municipality
Country / countries	Bhutan
NDE focal point and organisation	Mr. Karma Tshering National Environment Commission Secretariat
Proponent focal point and organisation	Mr. Tenzin Department of Engineering Services
Sector(s) addressed	**Adaptation**
Technologies supported	Flood vulnerability mapping Flood hazard mapping Flood risk mapping Scouring design for dikes
Implementation period and total duration	August 2016-April 2018 (Response plan design + Implementation of the plan)
Total budget for implementation	USD 54,500
Designer of the response plan	**Asian Institute of Technology**
Implementer of response plan	**Asian Institute of Technology**

2. Summary of all activities, outputs and products that contribute to the expected impact of the technical assistance.

Description of delivered outputs and products as well as the activities undertaken to achieve them. In doing so, review the log frame of the original response plan and refer to it as appropriate	The technical assistance had four broad outputs: 1. Data collected for flood risk assessment works 2. Capacity building program on "Flood risk assessment and management" 3. Flood hazard and flood risk maps for Samdrupjhonkar Thromde 4. Preliminary design for pilot flood alleviation intervention The outputs resulted in the following deliverables, corresponding to each of the outputs: 1. Primary and secondary data collection report 2. Workshop report 3. Flood maps (vulnerability, hazard, and risk) 4. Design of pilot project
Partners organisations	Asian Institute of Technology (Implementing organization) Flood Engineering and Management Division (Recipient)
Beneficiaries	Flood Engineering and Management Division
Methodologies applied to produce outputs and products	Field survey Questionnaire survey Hydrological and hydrodynamic modelling GIS-based mapping Structural engineering analysis
Deviations	A minor deviation was in the final output. Based on the interaction with the local engineers it became evident that the existing flood protection works (dikes) are facing serious scouring problem at some locations. Hence, the objective of pilot project was changed to address this scouring problem for existing structures instead of designing an altogether new structure.
Achieved or anticipated gender benefits from the TA	Three female engineers from FEMD and Samdrupjhonkar Thromde were involved in the project (out of ten). Their technical and operational capacities with regards to flood risk assessment have been enhanced as a result of this TA. The TA outputs are primarily for the Samdrupjhonkar municipality which has a population of 7,500. Females account for 48% of the population. Therefore, successful follow-up activities to this TA has the potential to mitigate flood risk for 3,600 women.
Achieved or anticipated co-benefits from the TA	While this TA was focused on Samdrupjhonkar Thromde in Bhutan, its outputs can be customized and scaled-up to other areas in Bhutan.
Anticipated follow up activities and next steps	The FEMD will now liaise with the Royal Government of Bhutan for a blanket funding, based on which appropriate interventions will be implemented (including the pilot project design) based on the outputs of this TA.

3. Lessons learnt

	Lessons learnt	Recommendations
Lessons learnt for this TA. Describe essential factors contributing to successful implementation, as well as specific challenges. Recommendations include considerations on what would need to be in place for	• It is really crucial to have an efficient coordinator within the recipient organization to help maintain the momentum and timelines. For this TA, the FEMD coordinator was exemplary	• The role of the in-country coordinator is crucial. Careful thought must be put into identifying this person.

increasing success of similar efforts (i.e. regulatory, legal, stakeholders, communication, etc.)	and much of the success of this TA can be attributed to her. • Most of the assistance was carried out remotely through on-the-job mentoring. While this is certainly a logical course, it would have helped if there were more frequent in-person interactions.	• Provisions should be made in the budgets to facilitate more in-person meetings and interactions between the implementers of the TA and its recipients.
Lessons learnt related to climate technology transfer Describe opportunities, challenges and barriers for the use and deployment of the technology or technologies supported by the TA. The objective is to identify specific success factors for technology transfer	• For TAs such as these, data availability is usually always a constraint. • With a wide gamut of available technologies, it is important to identify the most appropriate technology (even if the most suitable is not the most elaborate or accurate) • One way to facilitate the sustainability of the TA outputs is to link it with a GCF proposal.	• It may be a good idea to carry out a thorough inventory of data needs and availability before the TA commences. • Technology is a tool. In some contexts, simple technologies are more useful than sophisticated ones. • It will be worthwhile to link each TA to a GCF project proposal.
Lessons learnt related the CTCN process for TA	• The timelines for the TA are heavily dependent on in-country processes and activities carried out by local stakeholders. In this case, because of the efficient leadership within FEMD, there was not much delay in the timelines. However, for other TAs the story may be different.	• The CTCN should factor in the delay caused by in-country stakeholders in order to arrive at feasible dates of completion.

4. Illustration of the TA and photos

Background and Context

- Various regions in Bhutan (e.g. Samdrupjhonkar Thrombe) have been grappling with flooding problems for years.
- Problem is compounded by steep topography and the projected increase in rainfall due to climate change.
- The Government of Bhutan recognizes the urgency of the situation
  - It approved a budget of Nu.728 million in the 11th Five Year Plan for flood protection
  - It established the Flood Engineering and Management Department (FEMD) to oversee all flood management works in the country.
- The newly established FEMD lacks the technical capacity to carry out the flood assessment studies, which is crucial in developing flood management interventions.

Objective of the CTCN TA: To enhance the skills of the relevant engineers in FEMD and Samdrupjhonkar municipality to indigenously undertake flood risk assessment and to translate this assessment into flood adaptation interventions.

CTCN TA Activities

CTCN TA Outputs and Results

Data collection

FEMD team carrying out a questionnaire survey with communities

FEMD team carrying out a river cross-section survey

CTCN TA Outputs and Results

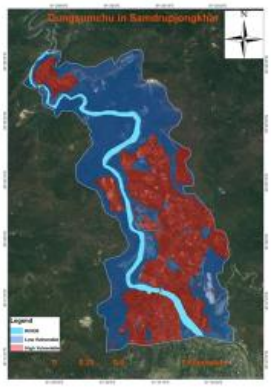
Capacity building programme

AIT technical experts delivering the training for the capacity building programme

Participants visit Thailand's Smart Water Operating Centre

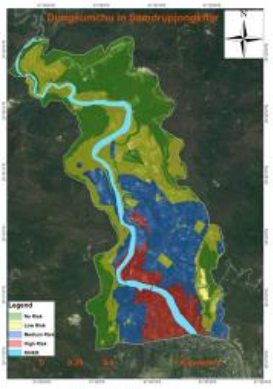
CTCN TA Outputs and Results

Flood maps



Flood vulnerability map

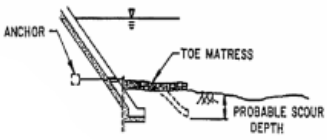
Flood hazard map



Flood risk map

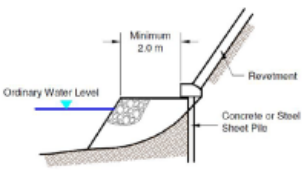
CTCN TA Outputs and Results

Pilot project preliminary design

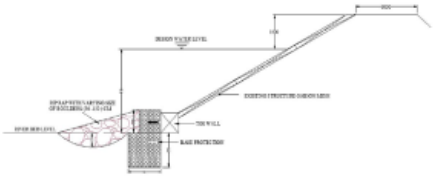


Toe protection against scoring

Apron for scoring protection



Concrete/sheet pile for scour protection



Rip rap to protect base of rivetment

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5. Information for TA impact description

The information in the table below will be used to produce the CTCN TA Impact Description.
The TA Impact description is a 2-page summary document for communication purposes.
Please copy information from sections above and technical delivery reports as required.

Challenge: Approx. 500 characters with spaces	Flooding is a recurrent problem in Bhutan. A combination of steep topography and the projected increase in rainfall in the coming decades due to climate change poses major threats. A key flood-vulnerable area, the Basin of Dungsumchhu, in the Samdrupjhomkar district of Bhutan, has suffered from a persistent flood problems. The newly formed Flood Engineering and Management Division (FEMD) lacks capacity to undertake flood mitigation interventions. This CTCN TA, therefore, seeks to enhance the skills of the relevant engineers in FEMD and Samdrupjhonkar district to indigenously undertake flood risk assessment and to translate this assessment into flood adaptation interventions
CTCN Assistance: 2 to 4 bullet points. Approximately 450 characters with spaces	• Providing technical guidance to FEMD engineers in collecting the required data for flood risk assessment. • Conducting a capacity building programme for FEMD engineers • Help FEMD produce flood vulnerability, hazard, and risk maps. • Guide FEMD engineers in designing a pilot flood alleviation intervention.
Anticipated impact: 2 to 4 bullet points to summarise anticipated impact. Approximately 250 characters with spaces. As a minimum, please include one of the following: i) Quantity of greenhouse gas emissions reduced, avoided or sequestered; or ii) Number of people with increased capacity to adapt to the impacts of climate variability and change.	• The TA outputs are primarily for the Samdrupjhonkar municipality which has a population of 7,500. Therefore, successful follow-up activities to this TA has the potential to mitigate flood risk for these 7,500 people. • The UNISDR probabilistic risk assessment (http://www.preventionweb.net/countries/btn/data/) suggests that the annual average loss in Bhutan as a result of flooding will be USD 54.65 Million. The technical assistance, thus, has the potential to reduce this number. • During the period 2003-2006, there were more than 505,000 water-borne disease related referral cases and 71 deaths in accordance to the morbidity reports compiled by the Ministry of Health. Water-borne diseases accounted for about 15% of the total health referral cases and for 3% of the deaths caused by all diseases. The technical assistance, through better flood management, can thus contribute to minimizing the spread of water-borne diseases.

Linkages and contribution to NDC: 2 to 4 bullet points. Approximately 350 characters with spaces	This CTCN TA directly supports Bhutan's NDC to "Develop a monitoring, assessment, and warning systems for flash flood and landslide hazards and risks", under the section on strengthening resilience to climate change hazards.
The narrative story: Approximately 1200 characters with spaces	In May 2016, FEMD and the National Designated Entity (NDE) of Bhutan, the National Environment Commission Secretariat (NECS), submitted a request for CTCN assistance on "*Capacity development for preparing an integrated flood management plan for Dungsamchhu Basin in Samdrupjongkhar*". The request was accepted by the CTCN, and AIT was engaged to provide technical support. After several rounds of interaction between AIT and FEMD, the scope of the technical assistance was defined specifically and deemed to focus on "*Flood Risk Assessment for Dungsamchhu Basin in Samdrupjhonkar District*". The objective of the technical assistance was to enhance the skills of the relevant engineers in FEMD and Samdrupjhonkar municipality to indigenously undertake flood risk assessment and to translate this assessment into flood adaptation interventions. The CTCN assistance comprised of four main activities: • Guide FEMD and local municipality engineers in collecting the required primary and secondary data for the flood risk assessment study. • Conduct a capacity building workshop on the various elements of flood risk assessment, and design of flood alleviation interventions. • Develop flood maps (vulnerability, hazard, and risk) for the Samdrupjhonkar District. • Mentor FEMD engineers in the design of a pilot flood intervention.
Contribution to SDGs: Always include contribution to SDG 13, and to the extent possible, please include contribution to 2 other SDGs, describing the contribution with a few sentence for each SDGs concerned. A complete list of SDGs and their targets is available here: https://sustainabledevelopment.un.org/partnership/register/	• The CTCN TA directly addresses SDG 13.1 by building capacities of national level and regional level engineers in Bhutan to help build resilience to climate-related hazards such as flooding. • The flood hazard map developed through this CTCN TA will be used to create awareness on the flood hazards among public, local authorities and other agencies. This contributes to SDG 13.3 • Flood management is a core component of any sustainable water management strategy. The theme of the CTCN TA is focused to improve

	flood management in the Somdrupjhonkar. This contributes to SDG 6. • The CTCN TA has ensured the effective participation of women in the project. This contributes to SDG 5. .

Note: Please see example of a TA Impact Description at the following link:
https://www.ctc-n.org/sites/www.ctc-n.org/files/benin_a_ag_forestry.final_.pdf

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Annex 1 (for internal use in donor and UN reporting)

A. Standardised CTCN performance indicators for donor and UN internal reporting

Please add quantitative values for indicators relevant to the particular TA in the list below. Non-relevant indicators should be left blank. Please only fill in the table for activities and outputs conducted or produced directly by the CTCN assistance.

CTCN standardised performance indicators	**Quantitative value**	**Qualitative description** *List the various elements corresponding to the quantitative value*
1. Overview		
Number of active person-days (not full duration) of technical assistance provided to counterparts or stakeholders by international experts and consultants	**80**	Flood management expert (30) Social science expert (5) GIS expert (10) Water management expert (23) Structural engineer (5) Hydrodynamic modeller (**7)**
Number of active person-days (not full duration) of technical assistance provided to counterparts or stakeholders by national experts and consultants		
Number of for external communication and outreach activities conducted to showcase the assistance (news release, newsletters, articles on website, etc.)		
2. Events (other than trainings) held as part of the assistance		
Number of international and multi-country (at regional or sub-regional level) technology and knowledge sharing events		
Number of participants in the events above		
Number of national technology and knowledge sharing events	1	Inception workshop
Number of participants in the events above	20	Participants from FEMD • Samdrupjhonkar Thromde • Department of Disaster Management • Department of Hydro-meteorological services.
Number of public-private events related to technologies		
Number of participants in the events above		
3. Training and capacity building activities conducted during the assistance		
Number of training sessions and capacity strengthening activities	**1**	Capacity building programme on "Flood risk assessment and management" at AIT from 30 Oct 2017-08 Nov 2017.
Number of people who received the training	**10**	
Number of men	**7**	
Number of women	**3**	
Total number of organisations trained	**3**	FEMD Samdrupjhonkar

		JICA (1 person, self-supported) staff based at FEMD
Number of research organisations, laboratories and universities		
Number of private companies		
Number of cities and local government	**1**	
Number of communities		
Number of ministries	**1**	
Number of specialised governmental institutions		
Number of non-profit organisations		
Level of satisfaction of participants after the training (from training feedback form). Categories include: From very satisfied, satisfied, partly not satisfied, not satisfied at all	**Very satisfied**	A detailed training evaluation can be found in Deliverable-2 " Training programme on flood risk assessment and management"
Percentage of participants that increased their capacities thanks to the training (from training feedback form). Categories include: Significantly, very, moderately, to none.	**Significantly**	A detailed performance improvement analysis can be found in Deliverable-2 " Training programme on flood risk assessment and management"
Percentage of men	**100**	
Percentage of women	**100**	
4. Tools, technical reports and information material supported by the assistance		
Total number of tools, technical reports and information material supported by the assistance (excluding mission, progress and internal reports)		
Number of tools strengthened, revised or developed		
Number of technical reports strengthened, revised or created		
Number of other information materials strengthened, revised or created		
5. Policies, laws and regulations supported by the assistance		
Number of policies, strategies, and plans drafted addressing climate change adaptation		
Number of policies, strategies, and plans drafted addressing climate change mitigation		
Number of documents developed to inform other policies, strategies, and plans on climate change adaptation (sectoral strategies, national development plans, etc.)		
Number of documents developed to inform other policies, strategies, and plans on climate change mitigation (sectoral strategies, national development plans, etc.)		
Number of laws, agreements, or regulations drafted addressing climate change adaptation		
Number of laws, agreements, or regulations drafted addressing climate change mitigation		
Number of documents developed to inform laws, agreements, or regulations on climate change adaptation		

Number of documents developed to inform laws, agreements, or regulations on climate change mitigation		
6. Institutional strengthening supported by the assistance		
Number of institutional arrangements in place to coordinate near and long-term national adaptation plans (NAPs)		
Number of organisations with increased technical capacity to advance near and long term national adaptation plans (NAPs) which integrate EbA	**1**	FEMD
Number of organisations with increase awareness and knowledge among countries to better own and drive national adaptation planning processes	**1**	FEMD
7. Partnerships and cooperation		
Number of private companies directly engaged in the assistance (that partnered with the proponent, the beneficiaries or the CTCN to implement the assistance)		
Number of South-South collaboration enabled during or through the assistance, when stakeholders from other countries were involved in the assistance		
Number of North-South collaboration enabled during or through the assistance, when stakeholders from other countries were involved in the assistance		
Number of Triangular collaboration enabled during or through the assistance, when stakeholders from other countries were involved in the assistance		

B. Indicators of anticipated impacts that may occur after the TA is completed

CTCN standardised performance indicators	**Quantitative value** Insert the request value and unit	**Content** List the elements included in the number provided	**Expected timeline** Indicate when the indicator and value are expected to be achieved	**Responsible institution** Indicate the institution(s) that will play leading role in enabling the indicators and anticipated values to be achieved
16. Anticipated finance mobilised				
a) Anticipated amount of public/donor investment mobilised (in USD) from the beneficiary country for climate change activities as a result of the TA	The Government of Bhutan has approved a budget of 10.5 million USD in the 11th Five Year Plan for flood	Flood protection interventions	Up to a year	FEMD

	protections works throughout the country. It is expected that some part of this budget would be made available for activities resulting from this TA			
b) Anticipated amount of public/donor investment mobilized (in USD) from international and regional sources for climate change activities as a result of the TA				
c) Anticipated amount of private investment mobilised (in USD) from the beneficiary country for climate change activities as a result of the TA				
d) Anticipated amount of private investment mobilised (in USD) from international and regional sources for climate change activities as a result of the TA				
17. Policies				
a) Anticipated number of policies, strategies, plans, addressing climate change mitigation officially proposed, adopted, or implemented as a result of the TA				
Anticipated number of policies, strategies, plans, addressing climate change adaptation officially proposed, adopted, or implemented as a result of the TA.				
b) Anticipated number of laws, agreements, or regulations addressing climate change mitigation officially proposed, adopted, or implemented as a result of the TA.				
Anticipated number of laws, agreements, or regulations addressing climate change				

adaptation officially proposed, adopted, or implemented as a result of the TA.				
c) Anticipated laws, policies, regulations, strategies and plans where climate change mitigation will be mainstreamed as a result of the TA				
Anticipated laws, policies, regulations, strategies and plans where climate change adaptation will be mainstreamed as a result of the TA				
18. Anticipated number of public-private partnerships created				
19. Anticipated twinning arrangements created as a result of the TA				
20. Anticipated number of technology projects prepared and implemented to support action on low emission and climate-resilient development				
21. Anticipated number of strengthened National Systems of Innovation and technology innovation centres in recipient country				
22. Anticipated Clean Energy Generation Capacity Clean supported by the TA that has achieved financial closure				
23**.** Anticipated and projected GHG reductions. Quantity of greenhouse gas (GHG) emissions, measured in metric tons of $CO_{2\text{-}e}$, anticipated to be reduced or sequestered as a result of projects supported by the TA				
24. Anticipated clean energy generation capacity supported by the TA that has achieved financial closure				
25. Anticipated and projected greenhouse gas emissions reduced or avoided through 2030, in metric tons of $CO_{2\text{-}e}$, from adopted laws, policies, regulations, or technologies related to clean energy/sustainable landscapes as a result of the TA				
26. Anticipated number of people improving their livelihood as co-benefits as a result of the TA				